From the INTERNATIONAL BUREAU

Applicant's or agent's file reference

2847-56232

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

Commissioner **US Department of Commerce United States Patent and Trademark** Office, PCT 2011 South Clark Place Room CP2/5C24 Arlington, VA 22202

ETATS-UNIS D'AMERIQUE Date of mailing (day/month/year) 17 July 2001 (17.07.01)

in its capacity as elected Office

International application No. PCT/US00/27210

International filing date (day/month/year) Priority date (day/month/year) 02 October 2000 (02.10.00) 01 October 1999 (01.10.99)

Applicant

HINTZ, William, E. et al

1.	The designated Office is hereby notified of its election made:	
	X in the demand filed with the International Preliminary Examining Authority on:	
	27 April 2001 (27.04.01)	
	in a notice effecting later election filed with the International Bureau on:	
2.	The election X was	
	was not	
	made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).	

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland

Authorized officer

Odile ALIU

Facsimile No.: (41-22) 740.14.35

Telephone No.: (41-22) 338.83.38



INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

PAULA A. DE GRANDIS KLARQUIST, SPARKMAN, CAMPBELL, LEIGH & WHINSTON, LLP ONE WORLD TRADE CENTER, SUITE 1600 121 SW SALMON STREET PORTLAND, OR 97204

SLR

PCT

WRITTEN OPINION

(PCT Rule 66)

		Date of Mailing (day/month/year)	17 AUG 2001
Applicant's or agent's file reference 2847-56232		REPLY DUE within TWO months from the above date of mailing	
International application No. PCT/US00/27210	International filing date 02 OCTOBER 2"	(dav/month/year)	Priority date (day/month/year) 01 OCTOBER 1999
International Patent Classification (IPC) IPC(7): C12N 9/00, 9/24, 15/09, 1/2	d IPC 35/69.2, 183	3, 200; 530/389.1	
Applicant UNIVERSITY OF VICTORIA INNO	VATION AND DEVEL	OPMENT CORPOR	ATION

1.	This written o	pinion is the first (first, etc.) drawn by this International	Preliminary Examining Authority.
2.	This opinion of	contains indications relating to the following items:	DOCKETED FOR: 10/17/01
	I X	Basis of the opinion	COADUTED
	11	Priority	COMPUTER
	III 🔲	Non-establishment of opinion with regard to novelty, inventive step or i	ndust-fial applicability
	IV	Lack of unity of invention	BKPR ************************************
	v x	Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventicitations and explanations supporting such statement	ive step of Ind ustrial a pplicability;
	VI 🔲	Certain documents cited	
	VII 🔲	Certain defects in the international application	
	VIII	Certain observations on the international application	
3.	The applicant	is hereby invited to reply to this opinion.	
	When?	See the time limit indicated above. The applicant may, before the expir Authority to grant an extension., see Rule 66.2(d).	ation of that time limit, request this
	How?	By submitting a written reply, accompanied, where appropriate, by ame For the form and the language of the amendments, see Rules 66.8 and	endments, according to Rule 66.3. 66.9.
	Also	For an additional opportunity to submit amendments, see Rule 66.4. For the examiner's obligation to consider amendments and/or argument For an informal communication with the examiner, see Rule 66.6.	s, see Rule 66.4 bis.
	If no reply i	is filed, the international preliminary examination report will be establish	ed on the basis of this opinion.
4.	The final date examination r	by which the international preliminary eport must be established according to Rule 69.2 is: 01 FEBRUARY 20	
			$\overline{}$

Name	and	mailing	address	OI	tne	IPEA/	US

Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231

Facsimile No. (703) 305-3230

Authorized officer

TERRY J. DEY PARALEGAL SPECIALIST TECHNOLOGY CENTER 1600 (703) 308-0196 MANJUNATH

Telephone No.

Form PCT/IPEA/408 (cover sheet) (July 1998) *

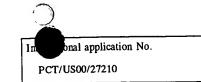




PCT/US00/27210

I.	Basis of th	e opinion	<u> </u>	
1 V	Vith regard to	the elements of the international application	on:*	
-		mational application as originally fil		
_	☱., .	cription:	,	
L	x the desc pages _			, as originally filed
	pages _	NONE		, filed with the demand
	pages _	MONE	, filed with the letter of	
	P-6			
Γ	X the clai	ms:		
_	pages _			
	pages _		, as amended (together with an	
	pages _			
	pages _	NONE , filed w	rith the letter of	3.0
r	x the drav	winge:		
L	y the drav			as originally filed
	pages _			, filed with the demand
			, filed with the letter of	
	bages -			
٢	X the sequ	nence listing part of the description:		
۲.	pages	1-13		, as originally filed
	pages _	NONE		, filed with the demand
	pages _	NONE	, filed with the letter of	
[These element the language or 55.3).		thority in the following languagethe purposes of international search onal application (under Rule 48.3() purposes of international preliminary	n (under Rule 23.1(b)). b)). examination (under Rules 55.2 and
г	drawn on th	to any nucleotide and/or amino acid so e basis of the sequence listing: ed in the international application in		application, the written opinion was
-			-	
Į		gether with the international applica		
	furnish	ed subsequently to this Authority in	written form.	
ſ	furnish	ed subsequently to this Authority in	computer readable form.	
[The star	tement that the subsequently furnished ional application as filed has been fur	I written sequence listing does not g nished.	o beyond the disclosure in the
[The stat	terment that the information recorded in ornished.	computer readable form is identical to	the writen sequence listing has
4.	X The an	nendments have resulted in the canc	ellation of:	
	X t	he description, pages NONE		
		he claims, Nos. NONE		
		he drawings, sheets/fig NONE		
5.	This op	oinion has been drawn as if (some of) the		e they have been considered to go
	•			
		sheets which have been furnished to the rec	ceiving Office in response to an invitation	n under Article 14 are referred to





v.	Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicabilit	у;
	citations and explanations supporting such statement	_

1.	statement			
	Novelty (N)	Claims Claims	2, 7 1, 3-6, 8-14	_ YES _ NO
	Inventive Step (IS)	Claims Claims	NONE 1-14	_ YES _ NO
	Industrial Applicability (IA)	Claims Claims	NONE	_ YES _ NO

2. citations and explanations

Claims 1, 3-6, 8-14 lack novelty under PCT Article 33(2) as being anticipated by Inoue et al.

Claims 1, 3-6, 8-14 are drawn to a purified protein having mannosidase activity comprising an amino acid sequence selected from the group consisting of a) SEQ ID NOs:3, 6, and 18, b) a conservative variant, or c) amino acid sequences having at least 60% sequence identity to the sequences specified in a) (claim 1), an isolated nucleic acid encoding the same, vector, host cell, a method for altering glycosylation pattern of a macromolecule (claims 3-6, 8-10), an isolated nucleic acid comprising a sequence selected from the group consisting of at least 15 nucleotides of SEQ ID NO:1 (claim 11(a)), a method for altering glycosylation pattern (claim 12), a method for isolating nucleic acid sequence encoding a mannosidase and a mannosidase identified by the above method (claims 13-14). Inoue et al. disclose a the isolation and identification of a mannosidase that is more than 60% identical to SEQ ID NO:6 and also disclose a nucleic acid encoding a mannosidase which is at least 15 nucleotides identical to SEQ ID NO:1, and the above described methods. Therefore Inoue et al. anticipate claims 1, 3-6, 8-14 of the instant application as written.

Claim 11 lacks novelty under PCT Article 33(2) as being anticipated by Kupfer et al.

Claim 11 is drawn to an isolated nucleic acid molecule comprising a sequence selected from a group consisting of at least 15, 20, 30 nucleotides of SEQ ID NO: 1, 4 or 17. Kupfer et al. disclose a nucleic acid molecule comprising 15, 20 or 30 nucleotides of SEQ ID NO:17. Therefore Kupfer et al. anticipate claim 11 of the instant application as written.

Claims 1-14 lack an inventive step under PCT Article 33(3) as being obvious over Inoue et al. in view of Turco et al. Claims 1-14 are drawn to a purified protein having mannosidase activity comprising an amino acid sequence selected from the group consisting of a)SEQ ID NOs:3, 6, and 18, b)a conservative (Continued on Supplemental Sheet.)





International application No.

PCT/US00/27210

Supp	lemental	Box
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(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: Boxes I - VIII

Sheet 10

TIME LIMIT:

The time limit set for response to a Written Opinion may not be extended. 37 CFR 1.484(d). Any response received after the expiration of the time limit set in the Written Opinion will not be considered in preparing the International Preliminary Examination Report.

V. 2. REASONED STATEMENTS - CITATIONS AND EXPLANATIONS (Continued):

variant, or c)amino acid sequences having at least 60% sequence identity to the sequences specified in a) (claim 1), a binding agent (claim 2), an isolated nucleic acid encoding the same, vector, host cell, a method for altering glycosylation pattern of a macromolecule (claims 3-6, 8-10), a transgenic fungus (claim 7), an isolated nucleic acid comprising a sequence selected from the group consisting of at least 15 nucleotides of SEQ ID NO:1 (claim 11(a)), a method for altering glycosylation pattern (claim 12), a method for isolating nucleic acid sequence encoding a mannosidase and a mannosidase identified by the above method (claims 13-14). Inoue et al. disclose a mannosidase that more than 60% identical to SEQ ID NO:6 and also a nucleic acid sequence encoding such a mannosidase and wherein at least 15 nucleotides are identical to SEQ ID NO:1. However, the reference does not teach the production of a transgenic fungus or the glycosylation methods. Turco et al. teach the different methods of glycosylation using a mnnosidase enzyme. It would have been obvious to one of ordinary skill in the art to combine the above two references with the high level of knowledge in the art of molecular biology to make a transgenic fungus comprising the above alpha-mannosidase and also to develop an assay to detect other mannosidases using the above polynucleotide sequences. One of ordinary skill in the art would have been motivated to do so as Inoue et al. provide a new alpha-mannosidase isolated from a industrially important fungus. One of skill in the art would have had a reasonable expectation of success since Inoue et al provide methods for all the above and also provide a nucleic acid sequence and an amino acid sequence of a alpha-mannosidase. therefore, the above invention would have been prima facie obvious to one of ordinary skill in the art.

Claims 2 and 7 meet the criteria set out in PCT Article 33(2)-(4), because the prior art does not teach or fairly suggest a binding agent or a transgenic fungus for alpha-mannosidase.

Database GenBank Accession No. AA787675, (KUPFER et al.) An Aspergillus nidulans EST database, 31 July 1998. Database Sptrembl_16 Accession No. Q12563, (INOUE et al.) Alpha mannosidase, 01 November 1996.



From the INTERNATIONAL SEARCHING AUTHORITY

To: PAULA A. DE GRANDIS

PCT

WHINSTON, LLP ONE WORLD TRADE CENTER, SUITE 1600 121 SW SALMON STREET PORTLAND, OR 97204	NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT				
	OR THE DECLARATION (PCT Rule 44.1)				
	Date of Mailing (day/month/year) 2 8 FEB 2001				
Applicant's or agent's file reference 2847-56232	FOR FURTHER ACTION See paragraphs 1 and 4 below				
International application No. PCT/US00/27210	International filing date (day/month/year) 02 OCTOBER 2000				
PC170300/27210					
Applicant UNIVERSITY OF VICTORIA INNOVATION AND DEVEL	OPMENT CORPORATION				
	l search report has been established and is transmitted herewith.				
	the claims of the international application (see Rule 46):				
When? The time limit for filing such amendm international search report; however, fo	nents is normally 2 months from the date of transmittal of the r more details, see the notes on the accompanying sheet.				
Where? Directly to the International Bureau of V 34, chemin des Colombo 1211 Geneva 20, Switze Facsimile No.: (41-22)	ettes rland				
For more detailed instructions, see the notes of	n the accompanying sheet.				
2. The applicant is hereby notified that no international Article 17(2)(a) to that effect is transmitted herewith	al search report will be established and that the declaration under h.				
3. With regard to the protest against payment of (an	n) additional fee(s) under Rule 40.2, the applicant is notified that:				
the protest together with the decision thereon	has been transmitted to the International Bureau together with the the protest and the decision thereon to the designated Offices.				
· · ·	; the applicant will be notified as soon as a decision is made.				
4. Further action(s): The applicant is reminded of the fo	ollowing:				
Shortly after 18 months from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in rules 90 bis 1 and 90 bis 3, respectively, before the completion of the technical preparations for international publication.					
Within 19 months from the priority date, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until 30 months from the priority date (in some Offices even later).					
Within 20 months from the priority date, the applicant	must perform the prescribed acts for entry into the national phase cted in the demand or in a later election within 19 months from the				
	Authorized officer				
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks	Authorized officer MANJUNATH RAO TERRY J. DEY				

Box PCT Washington, D.C. 20231 PARALEGAL SPECIALIST (703) 30**TECHNOLOGY CENTER 1600** Telephone No. Facsimile No. (703) 305-3230



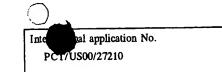
PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 2847-56232	FOR FURTHER ACTION	see Notification of (Form PCT/ISA/22	Transmittal of International Search Report 0) as well as, where applicable, item 5 below.			
International application No.	International filing date	(day/month/year)	(Earliest) Priority Date (day/month/year)			
PCT/US00/27210	02 OCTOBER 2000		01 OCTOBER 1999			
Applicant UNIVERSITY OF VICTORIA INNOV	ATION AND DEVELO	PMENT CORPORA	TION			
This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau. This international search report consists of a total of sheets. X It is also accompanied by a copy of each prior art document cited in this report.						
1. Basis of the report a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filled, unless otherwise indicated under this item. the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)). b. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of the sequence listing: contained in the international application in written form. filled together with the international application in computer readable form. furnished subsequently to this Authority in written form. the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filled has been furnished. the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished. Certain claims were found unsearchable (See Box I). Unity of invention is lacking (See Box II). With regard to the title, X the text is approved as submitted by the applicant. the text has been established by this Authority to read as follows:						
5. With regard to the abstract, X the text is approved as submit the text has been established, Box III. The applicant may, very search report, submit commet. 6. The figure of the drawings to be put	according to Rule 38.2(b within one month from the ints to this Authority.	date of mailing of the	as it appears in his international			
as suggested by the applicant		s rigute No.				
because the applicant failed t			X None of the figures.			
because this figure better cha						





Во	x I	Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)
Thi	is in	ternational report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:
1.		Claims Nos.: because they relate to subject matter not required to be searched by this Authority, namely:
2.		Claims Nos.: because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3.		Claims Nos.: because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).
Во	ı II	Observations where unity of invention is lacking (Continuation of item 2 of first sheet)
Th	nis II	nternational Searching Authority found multiple inventions in this international application, as follows:
		Please See Extra Sheet.
1.		As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2.		As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3.		As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4.	. [No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:
R	lem 2	The additional search fees were accompanied by the applicant's protest. No protest accompanied the payment of additional search fees.

IPC(T) . C12N 900, 974, 15/09, 1/20. C7/R 16/00 ISC CL 435/69 2, 183, 200; 530/389.1 According to International Patent Classification (IPC) or to both national classification and IPC R FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) U.S.: 435/69.2, 183, 200; 530/389.1 Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) BIOSIS, CAPLUS, EMBASE, MEDLINE, SCISEARCH, USPTO WEST. C. DOCUMENTS CONSIDERED TO BE RELEVANT Category* Citation of document, with indication, where appropriate, of the relevant passages Relevant to claim No. X. HERSCOVIC ET AL. Isolation of a mouse golgi mannosidase cDNA, a member of a gene family conserved from yeasts to mammals. J. Biol. Chem. 01 April 1994, Vol. 269, No. 13, pages 9864-9871, see especially pages 9870-9871. X. LAL ET AL. Isolation and expression of murine and rabbit cDNAs encoding an alpha-mannosidase involved in the processing of asparagine-linked oligosaccharides. J. Biol. Chem. 01 April 1994, Vol. 269, No. 13, pages 9872-9881, see entire article. Y. TURCO ET AL. Altered G-protein glycosylation in vesicular stomatitis virus-infected glucose-deprived baby hamster kidney cells. J. Biol. Chem. 10 August 1982, Vol. 257, No. 15, pages 8674-8679, see entire article. Value of the actual completion of the international fling date but lever than the actual completion of the international search report than the actual completion of the international search report 2 8 FEB 2001. Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Weatherton, D. C 20231						
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) U.S.: 435/69.2, 183, 200; 530/389.1 Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) BIOSIS, CAPLUS, EMBASE, MEDLINE, SCISEARCH, USPTO WEST. C. DOCUMENTS CONSIDERED TO BE RELEVANT Category* Citation of document, with indication, where appropriate, of the relevant passages Relevant to claim No. HERSCOVIC ET AL. Isolation of a mouse golg imannosidase to DNA, a member of a gene family conserved from yeasts to mammals. J. Biol. Chem. 01 April 1994, Vol. 269, No. 13, pages 9864-9871, see especially pages 9870-9871. X. LAL ET AL. Isolation and expression of murine and rabbit cDNAs encoding an alpha-mannosidase involved in the processing of apparagine-linked oligosaccharides. J. Biol. Chem. 01 April 1994, Vol. 269, No. 13, pages 9872-9881, see entire article. Y. TURCO ET AL. Altered G-protein glycosylation in vesicular stomatitis virus-infected glucose-deprived baby hamster kidney cells. J. Biol. Chem. 10 August 1982, Vol. 257, No. 15, pages 8674-8679, see entire article. V. Purther documents are listed in the continuation of Box C	IPC(7)					
Minimum documentation searched (classification system followed by classification symbols) U.S.: 435/69.2, 183, 200; 530/389.1 Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) BIOSIS, CAPLUS, EMBASE, MEDLINE, SCISEARCH, USPTO WEST. C. DOCUMENTS CONSIDERED TO BE RELEVANT Category* Catation of document, with indication, where appropriate, of the relevant passages Relevant to claim No. X. HERSCOVIC ET AL. Isolation of a mouse golgi mannosidase cDNA, a member of a gene family conserved from yeasts to mammals. J. Biol. Chem. 01 April 1994, Vol. 269, No. 13, pages 9864-9871, see especially pages 9870-9871. X. LAL ET AL. Isolation and expression of murine and rabbit cDNAs encoding an alpha-mannosidase involved in the processing of asparagine-linked oligosaccharides. J. Biol. Chem. 01 April 1994, Vol. 269, No. 13, pages 9872-9881, see entire article. Y. TURCO ET AL. Altered G-protein glycosylation in vesicular stomatitis virus-infected glucose-deprived baby hamster kidney cells. J. Biol. Chem. 10 August 1982, Vol. 257, No. 15, pages 8674-8679, see entire article. X. Purther documents are listed in the continuation of Box C. See patent family annex. X. Special categories of cited documents of the set which in not considered to be of proteins relevance in the set of the set which any throw doubt on printry fating due to the set of the s			,			
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U.S.: 435/69.2, 183, 200; 530/389.1 Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched letter to the data base consulted during the international search (name of data base and, where practicable, search terms used) BIOSIS, CAPLUS, EMBASE, MEDLINE, SCISEARCH, USPTO WEST. C. DOCUMENTS CONSIDERED TO BE RELEVANT Category* Citation of document, with indication, where appropriate, of the relevant passages Relevant to claim No. X. HERSCOVIC ET AL. Isolation of a mouse golgi mannosidase cDNA, a member of a gene family conserved from yeasts to marmals. J. Biol. Chem. Ol April 1994, Vol. 269, No. 13, pages 9864-9871, see especially pages 9870-9871. X. LAL ET AL. Isolation and expression of murine and rabbit cDNAs encoding an alpha-mannosidase involved in the processing of asparagnine-linked oligosaccharides. J. Biol. Chem. Ol April 1994, Vol. 269, No. 13, pages 9872-9881, see entire article. Y. TURCO ET AL. Altered G-protein glycosylation in vesicular stomatitis virus-infected glucose-deprived baby hamster kidney cells. J. Biol. Chem. 10 August 1982, Vol. 257, No. 15, pages 8674-8679, see entire article. X. Purther documents are listed in the continuation of Box C. See patent family annex. Special categories of cited documents. A. document of cited documents. A. Special categories of cited documents.		· · · · · · · · · · · · · · · · · · ·				
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) BIOSIS, CAPLUS, EMBASE, MEDLINE, SCISEARCH, USPTO WEST. C. DOCUMENTS CONSIDERED TO BE RELEVANT Category* Citation of document, with indication, where appropriate, of the relevant passages Relevant to claim No. X. HERSCOVIC ET AL. Isolation of a mouse golgi mannosidase condition of a mouse golgi mannosidase condition of a mannal of the relevant passages Relevant to claim No. X. HERSCOVIC ET AL. Isolation of a mouse golgi mannosidase condition of a mouse golgi mannosidase condition of the relevant passages Relevant to claim No. X. LAL ET AL. Isolation and expression of murine and rabbit cDNAs encoding an alpha-mannosidase involved in the processing of asparagine-linked oligosaccharides. J. Biol. Chem. 01 April 1994, Vol. 269, No. 13, pages 9872-9881, see entire article. Y. TURCO ET AL. Altered G-protein glycosylation in vesicular stomatitis virus-infected glucose-deprived baby hamster kidney cells. J. Biol. Chem. 10 August 1982, Vol. 257, No. 15, pages 8674-8679, see entire article. X. Purther documents are listed in the continuation of Box C. X. See patent family annex. Y. Special exagories of ided documents. Y. Special exagories of irred documents which may those doubts on priority claim(n) or which is ided to articular producency to the service of the same conflict with the spillosion but cited to understand the priority dist. Ghained invention cannot be document which may those doubts on priority claim(n) or which is ided to articular reference to an exagority or the priority claim(n) or which is ided to articular reference to an exagority or the priority claim(n) or which is ided to articular reference to an exagority or the			d by classification symbols)			
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) BIOSIS, CAPLUS, EMBASE, MEDLINE, SCISEARCH, USPTO WEST. C. DOCUMENTS CONSIDERED TO BE RELEVANT Category* Citation of document, with indication, where appropriate, of the relevant passages Relevant to claim No. HERSCOVIC ET AL. Isolation of a mouse golgi mannosidase cDNA, a member of a gene family conserved from yeasts to mammals. J. Biol. Chem. 01 April 1994, Vol. 269, No. 13, pages 9864-9871, see especially pages 9870-9871. X. LAL ET AL. Isolation and expression of murine and rabbit cDNAs encoding an alpha-mannosidase involved in the processing of asparagine-linked oligosaccharides. J. Biol. Chem. 01 April 1994, Vol. 269, No. 13, pages 9872-9881, see entire article. Y. TURCO ET AL. Altered G-protein glycosylation in vesicular stomatitis virus-infected glucose-deprived baby hamster kidney cells. J. Biol. Chem. 10 August 1982, Vol. 257, No. 15, pages 8674-8679, see entire article. X. Purther documents are listed in the continuation of Box C. X. Special categories of citied documents of the structure of the content of the international filing date or priority date chained in the content of the international filing date or priority placed in the content of the international filing date or priority date chained in the content of patients referring to an oral disclessure, use, exhibition or other received in the content of the international filing date to document verbine by the priority date chained in the content of patients referring to an oral disclessure, use, exhibition or other received in the comment of patients referring to an oral disclessure, use, exhibition or other received in the comment of patients referring to an oral disclessure, use, exhibition or other received in the comment of patients referring to an oral disclessure, use, exhibition or other received received to be of patients referring to an oral disclessure, use, exhibition or other received received to the co	U.S. :	435/69.2, 183, 200; 530/389.1				
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Interest 1 application No. PC1.2500/27210

BOX II. OBSERVATIONS WHERE UNITY OF INVENTION WAS LACKING This ISA found multiple inventions as follows:

This application contains the following inventions or groups of inventions which are not so linked as to form a single inventive concept under PCT Rule 13.1. In order for all inventions to be searched, the appropriate additional search fees must be paid.

Group I, claims 1, 3-7, 11, 13-14, drawn to a purified mannosidase, polynucleotides and method of making.

Group II, claim 2, drawn to a binding agent that binds the purified protein.

Group III, claims 8-10 and 12, drawn to a method of altering glycosylation pattern of a macromolecule.

The inventions listed as Groups I-III do not relate to a single inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: Mannosidases, their polynucleotides, binding agents and method of altering the glycosylation pattern of macromolecules are well known in the prior art. Thus, the above invention, when considered as a whole does not contribute over the prior art (see Turco et al. J. Biol. Chem., 1982, Vol. 257(15):8674-8679).

(19) World Intellectual Property Organization International Bureau





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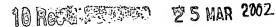
- With international search report.
- Before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments.

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: MANNOSIDASES AND METHODS FOR USING SAME

(57) Abstract: Mannosidase enzymes and use of such enzymes to alter the glycosylation patterns of macromolecules are disclosed. Also disclosed are the nucleic acid sequences encoding the mannosidase enzymes.

PCT/US00/27210



SEQUENCE LISTING

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WO 01/25406

PCT/US00/27216

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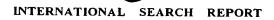
WO 01/25406 PCT/US00/27210

INTERNATIONAL SEARCH REPORT



International application No. PCT/US00/27210

A. CLASSIFICATION OF SUBJECT MATTER							
IPC(7) :C12N 9/00, 9/24, 15/09, 1/20; C07K 16/00							
US CL: 435/69.2, 183, 200; 530/389.1 According to International Patent Classification (IPC) or to both national classification and IPC							
B. FIELDS SEARCHED							
Minimum d	locumentation searched (classification system followed	1 by classification symbols)					
	435/69.2, 183, 200; 530/389.1	•					
Documentat	tion searched other than minimum documentation to the	extent that such documents are included i	n the fields searched				
Electronic d	Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)						
BIOSIS, 0	CAPLUS, EMBASE, MEDLINE, SCISEARCH, US	PTO WEST.					
C. DOC	CUMENTS CONSIDERED TO BE RELEVANT						
Category*	Citation of document, with indication, where ap	propriate, of the relevant passages	Relevant to claim No.				
x	HERSCOVIC ET AL. Isolation of a		1, 3-14				
	cDNA, a member of a gene family	conserved from yeasts to	******				
Y	mammals. J. Biol. Chem. 01 April 199		1, 3-14				
	9864-9871, see especially pages 9870-9	9871.					
X	LAL ET AL. Isolation and expression	of murine and rabbit cDNAs	1, 3-14				
	encoding an alpha-mannosidase invo		1, 3-14				
Y	asparagine-linked oligosaccharides. J.		1, 3-14				
	Vol. 269, No. 13, pages 9872-9881, se						
v	TUDGO ET AL Altored Companie	1111111111111	1 0 14				
Y	TURCO ET AL. Altered G-protein stomatitis virus-infected glucose-deprive		1, 3-14				
	J. Biol. Chem. 10 August 1982, Vol. 25	-					
1	see entire article.	77, 140. 13, pages 6077-6077,					
		1					
X Purti	her documents are listed in the continuation of Box C.	. See patent family annex.					
l	Special categories of cited documents: "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand						
to	ocument defining the general state of the art which is not considered to be of particular relevance	the principle or theory underlying the					
	arlier document published on or after the international filing date	"X" document of particular relevance; the considered novel or cannot be consider when the document is taken alone					
cit	document which may throw doubts on priority claim(s) or which is when the document is taken alone cited to establish the publication date of another citation or other special reason (as specified) "Y" document of particular relevance; the claimed invention cannot be						
O do	document referring to an oral disclosure, use, exhibition or other means document referring to an oral disclosure, use, exhibition or other means document referring to an oral disclosure, use, exhibition or other being obvious to a person skilled in the art						
th	ocument published prior to the international filing date but later than be priority date claimed	*&* document member of the same patent					
Date of the	Date of the actual completion of the international search Date of mailing of the international search report						
15 JANU	15 JANUARY 2001 2 & FEB 2001						
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Box PCT	on, D.C. 20231	MANJUNATH RAO PARALEGAL SPECIALIST					
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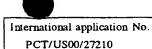




International application No. PCT/US00/27210

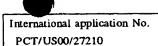
C (Continua	ation). DOCUMENTS CONSIDERED TO BE RELEVANT	
Category*	Citation of document, with indication, where appropriate, of the relevant	passages Relevant to claim
X Y	US 5,837,836 A (FRIDERICI ET AL.) 17 November 1998 (17/11/98) see entire document.	2 2
X Y	US 5,578,484 A (HOROSZEWICZ) 26 November 1996 (2 see entire document.	26/11/96) 2 2
X Y	EADES ET AL. Identification and analysis of a class 2 alpmannosidase from Aspergillus nidulans. Glycobiology. 1998, pages 17-33, see entire document.	oha- 98, Vol. 1-14 1-14
X Y	INOUE ET AL. Molecular cloning and nucleotide sequence 1,2-alpha-D-mannosidase gene, msds, from Aspergillus sair expression of the gene in yeast cells. Biochimica et Biophy Acta. 1995, Vol. 1253, pages 141-145, see entire document	toi and





Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet) This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons: Claims Nos.: because they relate to subject matter not required to be searched by this Authority, namely: Claims Nos.: because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically: Claims Nos.: because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a). Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet) This International Searching Authority found multiple inventions in this international application, as follows: Please See Extra Sheet. As all required additional search fees were timely paid by the applicant, this international search report covers all searchable As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee. As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.: No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.: Remark on Protest The additional search fees were accompanied by the applicant's protest. No protest accompanied the payment of additional search fees.





BOX II. OBSERVATIONS WHERE UNITY OF INVENTION WAS LACKING This ISA found multiple inventions as follows:

This application contains the following inventions or groups of inventions which are not so linked as to form a single inventive concept under PCT Rule 13.1. In order for all inventions to be searched, the appropriate additional search fees must be paid.

Group I, claims 1, 3-7, 11, 13-14, drawn to a purified mannosidase, polynucleotides and method of making.

Group II, claim 2, drawn to a binding agent that binds the purified protein.

Group III, claims 8-10 and 12, drawn to a method of altering glycosylation pattern of a macromolecule.

The inventions listed as Groups I-III do not relate to a single inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: Mannosidases, their polynucleotides, binding agents and method of altering the glycosylation pattern of macromolecules are well known in the prior art. Thus, the above invention, when considered as a whole does not contribute over the prior art (see Turco et al. J. Biol. Chem., 1982, Vol. 257(15):8674-8679).